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Edging Ahead:
XR, GenAI, and Beyond

Leslie Shannon

Head of Trend and Innovation Scouting

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Effective Digital/Physical Fusion will look a lot like a heads-up display – at least at first

BMW's built-in automotive HUD, available today, and AR glasses for motorcycles, coming 2024

BMW ConnectedRide Smartglasses connect to a smartphone and show outside temperature, speed, speed limit, gear, and turn-by-turn navigation, with clear, tinted, or prescription lenses

Battery lasts 10 hours

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XR glasses for driver navigation and passenger entertainment

BMW Augmented Reality Concept with XReal, CES 2024

BMW's PoC demo used XReal glasses and in-car positioning software to visually anchor navigation elements in the physical world outside the car

Passengers can play road-based games, watch HD video, or get location info

All footage shot through the glasses - no CGI!

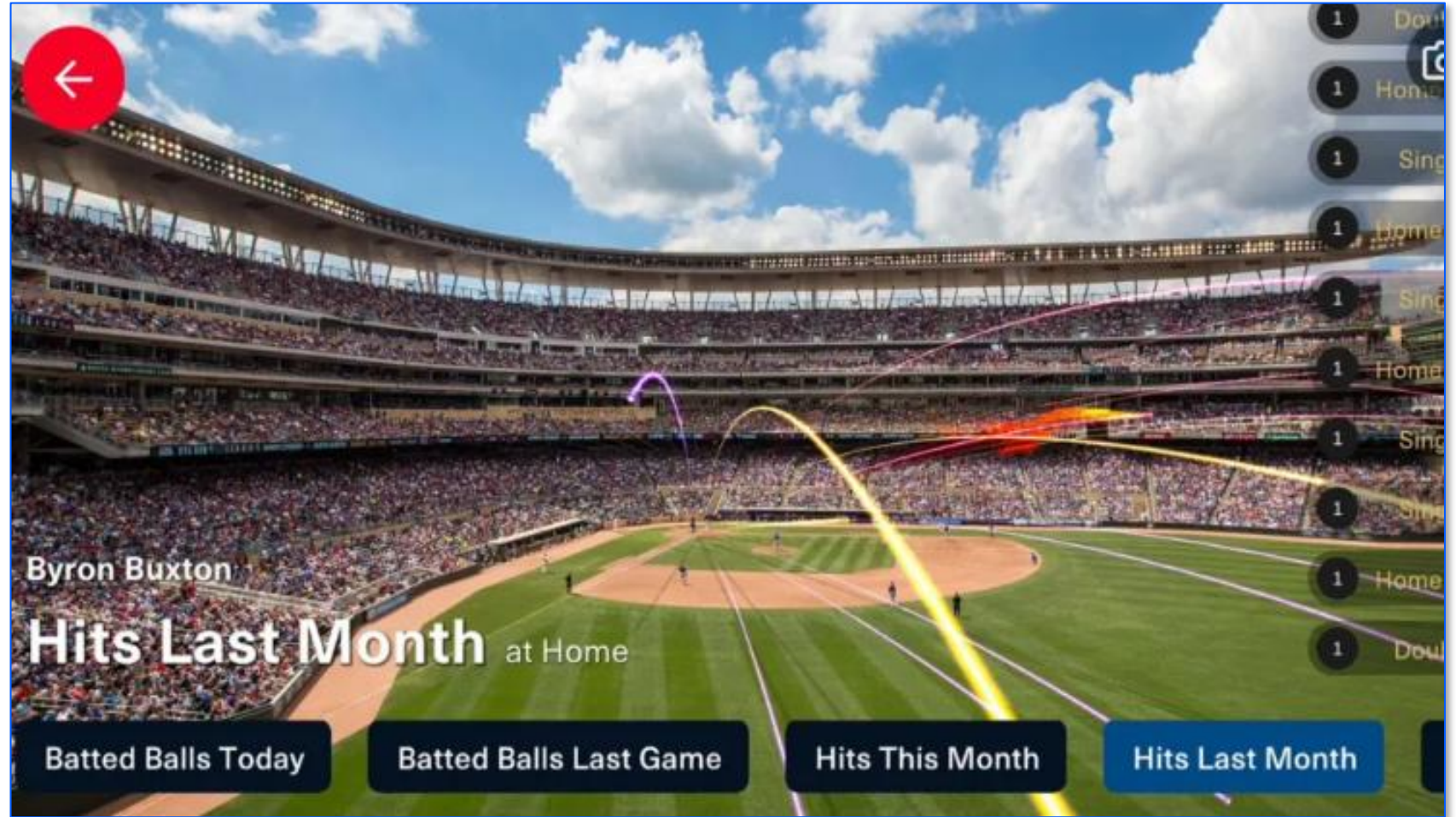BMW AUGMENTED REALITY RIDE CONCEPT

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Baseball team adds AR statistics to the in-stadium experience

Minnesota Twins and Around, USA

Twins fans attending live games can see players' historical performance in an AR overlay on the physical field by holding up their smartphone and activating the ARound app

A similar approach could give football fans an in-person first down line like they are used to seeing on television

TV AR

TV AR

Painted on the field

Byron Buxton

Hits Last Month at Home

| Batted Balls Today | Batted Balls Last Game | Hits This Month | Hits Last Month |

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Meta Ray-Ban Glasses with handsfree and "Multimodal" AI

Coming 2024, US-only at start

Meta AI voice control

Spark creativity, get information and control features with your voice—just ask M[...] don't miss a beat.

So if you're out grilling with a group of friends, you can ask:

- "Hey Meta—I'm grilling scallops, corn on the cob, and burgers—how long sh[...] them?"
  - "Hey Meta—what salad goes well with that?"

Or if you find yourself in a messy situation while finger painting with a toddler, you can ask:

- "Hey Meta—how do I wash finger paint off walls?"
  - "Hey Meta—send a photo to Grandpa on WhatsApp."

With voice control you can take photos/videos, make calls, send messages and more—it all starts with "Hey Meta."

Look and tell me what fruit is this

The fruit in the image appears to be a breadfruit.

To its Ray-Ban glasses, Meta is adding both an AI interface for voice-only queries and a "multimodal" interface that uses input from the glasses' forward-facing cameras as well as the voice cues, triggered by "Meta, look and tell me" – both in beta in 2024

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New superpower: Gaze tracking + audio GenAI

Zinn Labs, USA, using low-power sensors from Prophesee, France

Zinn Labs' accurate eye tracking allows users to interact with audio GenAI through a combination of gaze and conversation, enabling a highly naturalistic, easy flow of context-aware information that was the best thing I saw at CES 2024

Zinn DK1 Eval Kit

User audio question:

How often should I water this?

The GenAI follows the user's gaze to determine what is being asked about from among all possible visible objects, using a forward-facing camera plus eye tracking

GenAI audio response:

Bunny Ears cactus should be watered about once a month

 | Source: Zinn Labs, January 2024

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Google runs into RAM limitations with on-phone GenAI

Google's Pixel 8 and Gemini

8GB OF RAM OUGHT TO BE ENOUGH FOR ANYBODY —

Google says running AI models on phones is a huge RAM hog

Google wants AI models to be loaded 24/7, so 8GB of RAM might not be enough.

Google recently announced that its Pixel 8 phone, although designed for AI, will not run Google's Gemini Nano AI model, due to "hardware limitations," while the Pixel 8 Pro will receive it – the advantage of having RAM-resident AI is that it's always instantly available for tasks like Smart Reply, which auto-generates text replies

In an in-house podcast, a Google representative commented that Google didn't want to "degrade the experience" for users of the Pixel 8, which has 8 GB of RAM, while the Pro has 12 GB of RAM

As Ars Technica put it, "Unlike an app, which can be loaded and unloaded as you use it, running something like Gemini Nano could mean permanently losing what is apparently a big chunk of system memory." (And what would it do to the battery?)

Source: Ars Technica, March 2024

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Vodafone creates off-device processing module for XR support

Vodafone Hyperreality Hub+

Vodafone's Hyperreality Hub+, designed for both enterprise and consumer use, has been developed using Qualcomm Snapdragon chips

The Hub is an off-device processing unit that handles computing, analytics, sensor support, and power use, so that these resources no longer need to be on an XR headset - as well as enabling multiplayer scenarios

By developing their next generation of lightweight body-mounted devices in conjunction with the resources available in the Hub, XR OEMs will be able to speed the development of wearable XR for indoor settings

The Hub integrates GenAI, natural language processing, and spatial computing to enable naturalistic human/computer interactions, making tech simpler and more accessible

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XR + Generative AI for enterprise - A possible future

Visualization of far more than just machine sensor data

"CFO View"

Key Takeaways

- Spatial computing, Generative AI, and gaming all require significant computing support, which goes against the desire for smaller, cheaper, and longer-battery life end devices in all three areas

- Hardware manufacturers and developers are already running into computing constraints when smartphones are used for off-device processing support

- Off-device processing located in the near network is already an essential ingredient for these new computing tasks, whose need will only grow

- Filling this need will create a new element in the value chain

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